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Yields of the Field Experiments 1982

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82/W/RN/16 Effects of Deep Pk - S. Barley, S. Oats

Rothamsted Research

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82/W/RN/16

EFFECTS OF DEEP PK

Object: To study the residual effects of subsoiling and of incorporating a large dressing of PK in either the subsoil or topsoil, on yields and nutrient uptakes of s. barley - Woburn Butt Furlong.

Sponsor: J. McEwen.

The ninth year, s. barley and s. oats.

For previous years see 74-81/W/RN/16.

Design: 4 series of 3 randomised blocks of 4 plots.

Whole plot dimensions: 4.27 x 2.59.

Treatments: Extra PK and subsoil treatment (applied autumn 1973):

PK SUB	Extra PK	Subsoil (25-50 cm) treatment
- - -	None	None
- - S	None	Subsoiled
P K T	To topsoil (0-25 cm)	None
P K S	To subsoil	Subsoiled

- NOTES: (1) The rates of P and K were 1930 kg P2O5, as superphosphate and 460 kg K2O as muriate of potash. These quantities, applied to subsoil, were chosen to equalize available P and K in top and subsoil.
- (2) Subsoiling was done by spade, after removing the topsoil which was then replaced. PK to subsoil was worked in by forking.
- (3) PK to topsoil was applied half before ploughing in autumn half soon after on the plough furrow.
- (4) Each series followed the rotation w. wheat, sugar beet, s. barley, potatoes until 1977, all were s. barley from 1978 to 1981, two were s. barley in 1982, one was s. oats, one was fallow.

Basal applications:

S. barley, s. oats: Manures: Magnesian limestone at 5.0 t, (20:10:10) at 590 kg. Weedkillers: Glyphosate at 1.5 kg in 280 l, dicamba with mecoprop and MCPA (as 'Poly-Farmon' at 4.9 l) in 280 l.

Fallow: Manures: Magnesian limestone at 5.0 t. Weedkiller: Glyphosate at 1.5 kg in 280 l.

Seed: S. barley: Triumph, dressed with ethirimol, sown at 160 kg.

S. oats: Peniarth, sown at 200 kg.

Cultivations, etc.:-

S. barley, s. oats: Glyphosate applied: 1 Oct, 1981. Magnesian limestone applied: 6 Oct. Ploughed: 17 Nov. Deep-tine cultivated: 25 Mar, 1982. NPK applied, spring-tine cultivated with crumbler attached: 26 Mar. Seed sown: 27 Mar. 'Poly-Farmon' applied: 14 May. Harvested by hand: 5 Aug.

Fallow: Glyphosate applied: 1 Oct, 1981. Magnesian limestone applied: 6 Oct. Ploughed: 17 Nov. Deep-tine cultivated: 25 Mar, 1982. Spring-tine cultivated with crumbler attached: 26 Mar.

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SERIES II S.BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

PK SUB	- - -	- - S	P K T	P K S	MEAN
	5.39	5.22	5.22	5.57	5.35

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	PK SUB
-----	-----
SED	0.314

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.385	7.2

GRAIN MEAN DM% 76.5

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

PK SUB	- - -	- - S	P K T	P K S	MEAN
	4.27	3.82	3.80	3.87	3.94

STRAW MEAN DM% 59.7

PLOT AREA HARVESTED 0.00071

82/W/RN/16

SERIES IV S.BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

PK SUB	- - -	- - S	P K T	P K S	MEAN
	4.73	4.68	5.06	5.02	4.87

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	PK SUB
-----	-----
SED	0.398

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.488	10.0

GRAIN MEAN DM% 78.1

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

PK SUB	- - -	- - S	P K T	P K S	MEAN
	3.49	3.51	3.78	3.69	3.62

STRAW MEAN DM% 62.7

PLOT AREA HARVESTED 0.00071

82/W/RN/16

SERIES III S.OATS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

PK SUB	- - -	- - S	P K T	P K S	MEAN
	3.74	3.48	3.52	3.68	3.61

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	PK SUB
-----	-----
SED	0.197

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.241	6.7

GRAIN MEAN DM% 70.5

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

PK SUB	- - -	- - S	P K T	P K S	MEAN
	6.95	6.24	6.57	6.68	6.61

STRAW MEAN DM% 37.6

PLOT AREA HARVESTED 0.00071